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EXAMINER

DHINGRA, RAKESH KUMAR

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/775,769

Applicant(s)

KASZUBA ET AL.

Examiner

Rakesh K. Dhingra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Arguments***

Applicant's arguments with respect to claims 1-7, 21 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended independent claims 1 and 21.

New reference has been found (US Patent No. 5,273,588) that reads on limitations of amended claims 1 and 21. Accordingly claims 1 and 21 and dependent claims 2-4 have been rejected under 35 USC 103 (a) as explained below. Further, remaining dependent claims 5-7 have been rejected under 35 USC 103 (a) as explained below.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-4, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Foster et al (US Patent No. 5,273,588).**

Regarding Claims 1, 21: Forster et al teach a semiconductor processing chamber (Figures 2, 4) comprising:

a chamber body 26 having a hole (aperture) 51 formed in a bottom of the chamber body;

a susceptor (substrate support) disposed in the chamber body;

a movable susceptor drive shaft (shaft) 50 coupled to the susceptor (substrate support) 40 and extending through the aperture 51;

a step formed in an inner surface of the aperture 51 (Figure 4) ;

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a sleeve (substantially annular guard ring) positioned within the step and extending radially inward and upwards toward the shaft 50. Foster et al also teach that nitrogen gas flows in space 121 (that is, seal is formed between sleeve 93 and bottom of chamber) [column 9, line 15 to column 12, line 65].

Regarding Claim 2: Foster et al teach a lip formed in the step adapted to retain sleeve (guard ring) 93 within the step (Figure 4).

Regarding Claim 3: Foster et al teach the sleeve (guard ring) 93 comprises a base portion having an outer circumference and an inner perimeter, wherein the outer circumference contacts the step and the inner perimeter is adapted for substantially sealing a gap between the shaft and the aperture (Figure 4).

Regarding Claim 4: Foster et al teach the outer circumference of sleeve (annular ring) 93 is formed as a substantially right angle to a bottom surface of the step (Figure 4).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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**Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foster et al (US Patent No. 5,273,588) in view of Al-Shaikh et al (US Patent No. 6,221,221).**

Regarding Claim 5: Foster et al teach all limitations of the claim but do not teach that outer circumference of guard ring flares outwards towards the substrate support.

Al-Shaikh et al teach a semiconductor processing chamber (Figure2) comprising:

a chamber body (walls 203, 211) having an aperture formed in a bottom of the chamber body (by bottom wall 211);

a substrate support (pedestal 206, susceptor 207) disposed in the chamber body;

a moveable pipe (shaft) 240 coupled to the substrate support and extending through the aperture;

a step formed in an inner surface of the aperture;

a collar (substantially annular guard ring) whose outer circumference flares outwards towards substrate support 206, 207 (column 3, line 40 to column 4, line 45).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use alternate shape of collar (guard ring) with outwardly flare on the outer circumference as taught by Al-Shaikh et al in the apparatus of Foster et al to provide desired sealing between shaft and sleeve as per process limitations.

In this connection courts have ruled (Case Law):

*“Regarding change in shape: It was held in re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that the shape was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape was significant. (Also see MPEP 2144.04(d)).”*

**Claims 6, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster et al (US Patent No. 5,273,588) in view of Al-Shaikh et al (US Patent No. 6,221,221) as applied to Claim 3 and further in view of Grantz et al (US Patent No. 5,938,343).**

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Regarding Claim 6: Foster et al in view of Al-Shaikh et al teach all limitations of the claim as explained above, but do not explicitly teach inner perimeter formed as wedge.

Grantz et al teach (Figures 4A, 4B) use of wedge shaped seal 80 as shaft seals in vacuum systems (column 6, lines 30-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use guard ring with inner perimeter formed as wedge as taught by Grantz et al in the apparatus of Foster et al in view of Al-Shaikh et al to achieve improved sealing between non-matching surfaces.

Regarding Claim 7: Al-Shaikh et al teach that upper edge of collar (guard ring) 248 projects above the bottom of chamber body 211 (Figure 2).

#### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

**Horiguchi et al (US Patent No. 6,506,257)** teach an apparatus (Figure 1) that includes a chamber 20 with an opening having an edge at its bottom through which a shaft 5 extends and a lower flange holder (guard ring) 8 that is disposed in the edge.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



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Art Unit 1763